

Space News **ROUNDUP!**



Final Relocation Of Center Employees Begins Today



737 Persons Will Vacate All Leased Houston Facilities

The final move from all leased facilities in Houston by Manned Spacecraft Center employees and contractors will get under way today and continue through June 30 as over 700 people vacate sites which were the last vestiges of the scattered Center while the Clear Lake location was under construction.

Center employees at Ellington AFB will continue to be located there until plans are completed to relocate them at the Clear Lake site.

Moving to the Center will be 475 employees in the Flight Operations Directorate, 55 from the Information Systems Division, 201 contractor employees, and six DOD liaison and other NASA center representatives.

Most of these 737 people will be located in Building 30 which is the Manned Spaceflight Control Center, Houston (MSCCH) (formerly known as the Mission Control Center). Their offices will be in the Support Wing and the Lobby Wing which leads into the Operations Wing.

Scheduled to move beginning today are 55 people in the Information Systems Division from Office City. They will be followed on Thursday by 185 persons in the Flight Control Division, who vacate the Stahl and Myers building. They will be relocated in Bldg. 30.

Beginning on Friday and continuing over the week-

end, 25 people from the MSCCH Program Office, 65 people from the Landing and Recovery Division, and 200 from the Mission Planning and Analysis Division will vacate offices in the Houston Petroleum

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MSC Technical Symposium Set For June 29

The next monthly Manned Spacecraft Center Technical Symposium will be held from 6:15 to 8:15 p.m., June 29 in the Auditorium.

Scheduled talks on the agenda are as follows: Photographic Processes and Techniques at MSC, by John R. Brinkman, Photographic Division.

Apollo Launch Escape Vehicle Dynamics, by Lovick O. Hayman, Advanced Spacecraft Technology Division;

Gemini Launch Guidance Switchover Monitoring, by Charlie B. Parker, Flight Control Division;

And Lunar Orbiter Mis-

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MANNED SPACEFLIGHT CONTROL CENTER, HOUSTON—The 737 people scheduled to begin vacating MSC leased sites in Houston today will move into offices which are located on three floors in two wings of the Manned Spaceflight Control Center, Houston, here at the Manned Spacecraft Center.

Legal Holiday Friday, July 3

Friday, July 3 will be observed as a legal holiday by Manned Spacecraft Center employees because July 4, Independence Day falls on a Saturday.

All offices will be closed and employees will be excused from duty without charge to leave or loss of pay.

Supervisors will notify all employees required to work on the holiday as far in advance as possible.

Symposium Briefs Scientists On Apollo Lunar Explorations

A group of scientists from universities throughout the nation, the U.S. Geological Survey, observatories, NASA centers, other government agencies and the Manned Spacecraft Center met here June 15-18 to take part in a Manned Lunar Exploration Symposium.

The symposium was conducted by the Manned Space Sciences Division of NASA Hq with MSC as the host.

Project Apollo plans for

the exploration of the lunar surface by man was the central theme of the four-day symposium, which briefed the prospective lunar experimenters on the capabilities and limitations of the Apollo mission and spacecraft.

In the first sessions the Apollo conceptual mission along with a description of the spacecraft and its capabilities for experiments were presented.

Following this was a presentation on lunar surface activities, astronaut training and the capabilities of the space suit.

Other session included MSC's research on lunar orbit experiments, the spacecraft's capability for orbital survey and extended exploration.

Sessions were held on lunar exploration in which talks were given on the fields of geology; mineralogy and petrography; geochemistry; seismology; heat, gravity, magnetic and atmospheric measurements; and the biological aspects of the lunar trip.

The final meetings were in small groups as the scientists gathered into experiment groups based on their respective specialties.

This advisory group of doctors will be meeting each month at one of the NASA centers and this was the fourth such meeting since the group formed five months ago. Hosting the group here at MSC, was Dr. Charles A. Berry, chief of Center Medical Programs.

Twenty-four prominent physicians from over the country, including government service, were here as representatives of the Lovelace Committee on an orientation visit under the

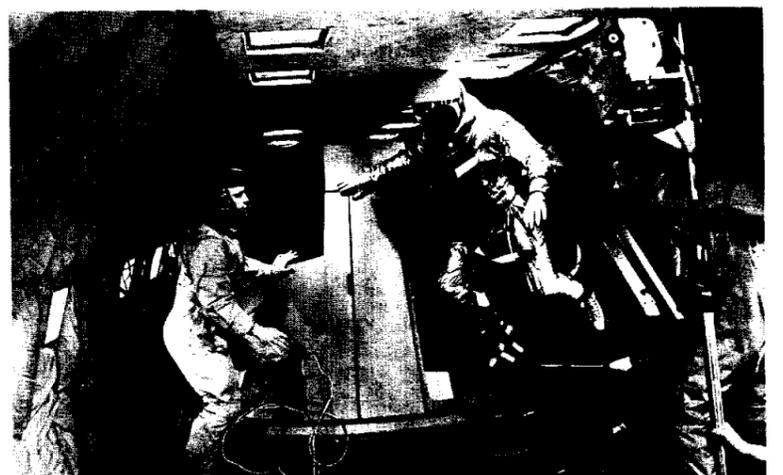
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Doctors Discuss, Hear Briefings Here On Medical Aspects Of Space Program

Two medical groups composed of physicians from over the United States met here at the Manned Spacecraft Center this month in connection with medical aspects of the space program.

The space Medicine Advisory Group held meetings here June 11-13 and the Lovelace Committee of physicians met here June 15 and 16.

Twenty-two members of the Space Medicine Advisory Group from NASA Hq and the Department of Defense were here to discuss medical experiments being used in the Gemini program and to investigate medical experiments for use in the Apollo program. They were also conducted on a tour of the Center.



RECENT WEIGHTLESS TESTS—During tests conducted recently at Wright-Patterson AFB, Ohio, in a converted KC-135 aircraft, McDonnell Aircraft pilot Norman Skyken flies weightless for 22 seconds as he leaves a Gemini mockup. The box on Skyken's chest and the hoses leading to the Gemini in background would supply astronauts with oxygen when they leave the spacecraft during flights. Weightlessness is attained by flying a falling (parabolic) curve.

Over 52,000 Attend MSC's First Open House

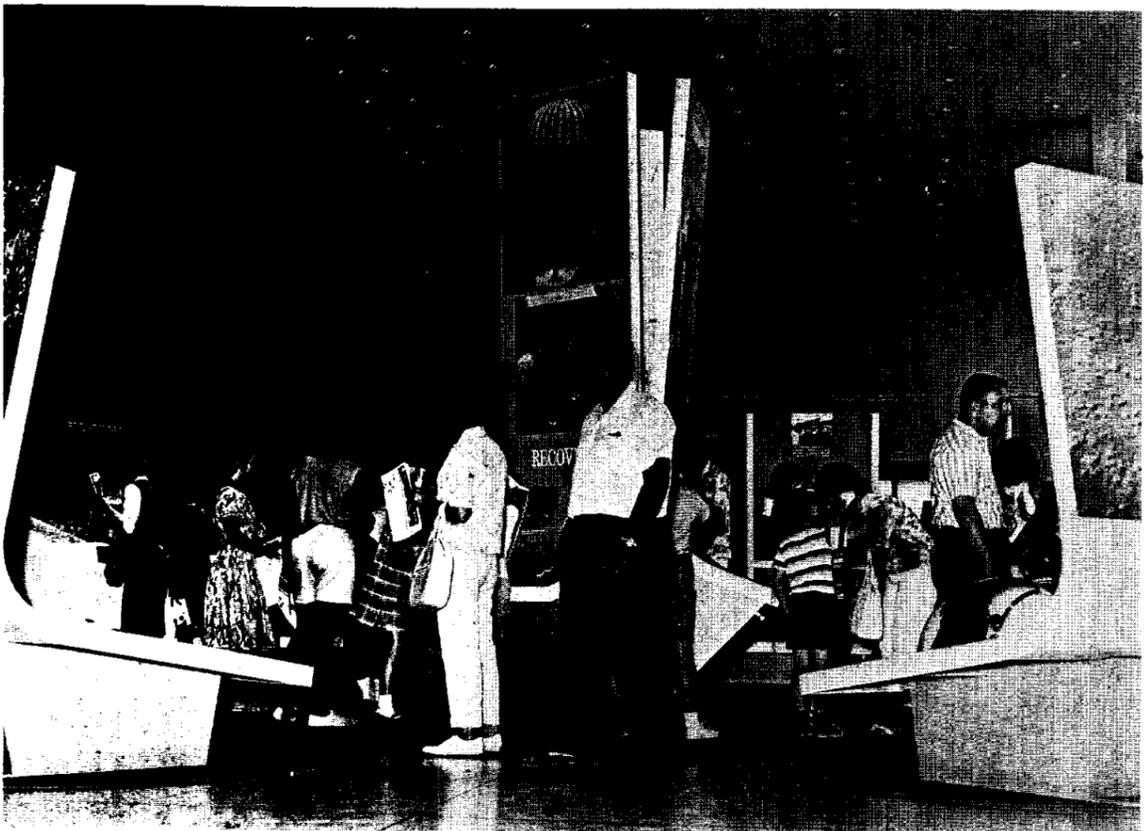
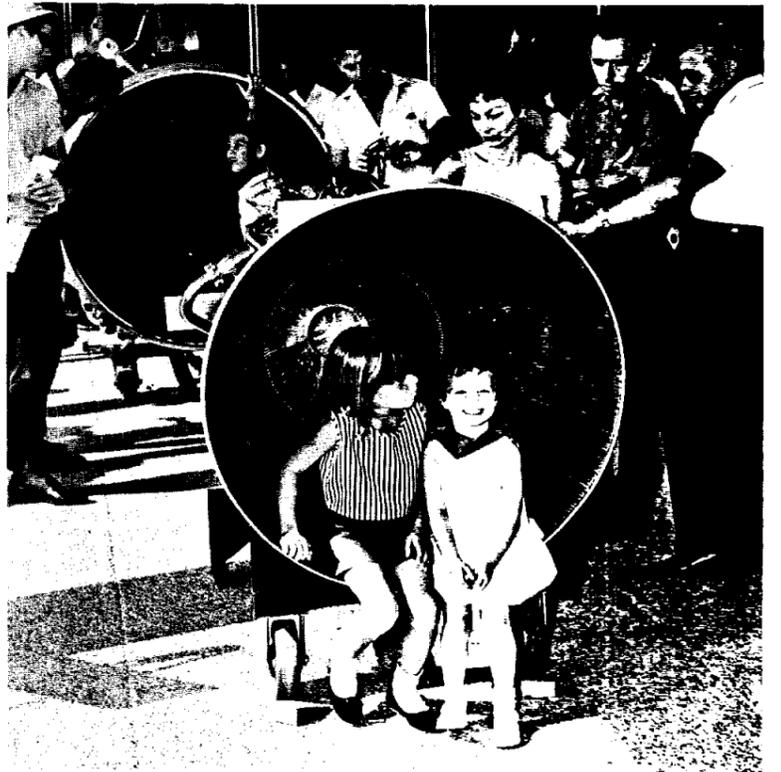
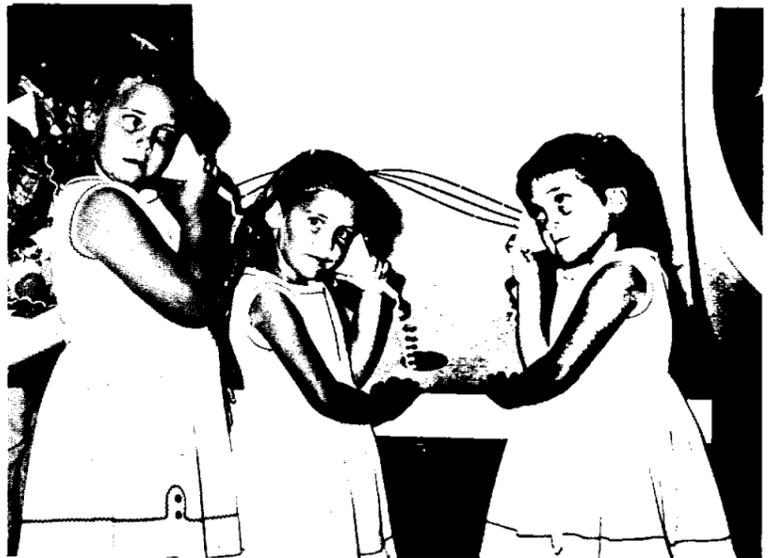
The first public showing of the Manned Spacecraft Center was held June 6 and 7 with over 52,000 persons taking a tour of the Center, and viewing the various displays depicting the past, present, and future hardware of the space program. Another 12,000 visitors

toured the Center the past two Sunday afternoons. The gates are open to the public from 1 to 5 p. m. each Sunday and will continue to be open until further notice. Displays in the area between the Center buildings and Highway FM 528, as well as those in the lobby

of the Auditorium will be available for inspection by the visitors.

A movie is also shown in

the 600 seat auditorium each half-hour during the hours the Center is open to the public.





APOLLO COLLAR TESTS—Initial tests of an Apollo auxiliary collar prototype were conducted by engineers of the Operational Evaluation and Test Branch of the Landing and Recovery Division the week of June 1, in the water tank in Hangar 135, Ellington AFB. Boilerplate 25 was used as the test vehicle. Technical Services Division supported the tests with scuba divers and other personnel. Also present at the tests were representatives of the Overhaul and Repair Department of NAS, Pensacola, Fla., who fabricated the test collar and are aiding in its development.

Relocation

(Continued from page 1)

Center and move into Bldg. 30 at the Center.

On June 30 the final move will be completed when 201 contractor employees will move from the IBM building to the Clear Lake site. Of these, 125 are IBM, 56 Philco, and 20 represent other contractors. This group will also be relocated in Bldg. 30 at the Center.

Included in the moves of the divisions above are six DOD liaison and representatives of other NASA centers as well as six persons from the Procurement and Contracts Division. The latter six will move to the third floor of Bldg. Two.

When this group has completed their move to the Center and Bldg. 30, the design occupancy for that

building will have been reached at that time with all available space being occupied.

Leases for all temporary facilities in Houston will expire at the end of June and all MSC employees will have been relocated prior to July 1.

Symposium

(Continued from page 1)

sions and Capabilities, by Israel Taback, Langley Research Center.

The Symposium will be preceded by a buffet dinner at the MSC Cafeteria from 4:45 to 6:15 p. m.

Admission to the technical meeting will require security clearance at the confidential level.

Additional information on the meeting may be had by calling Warren Gillespie Jr., meeting manager, at Ext. 33711.

Lunar Landing By Landmarks Subject Of Study

Space scientists at the NASA Manned Spacecraft Center here have signed a \$67,261 contract with Geonautics, Inc., Washington, D. C., for a study of how lunar spacecraft might be flown by reference to landmarks on the moon. The study contract will be completed by February, 1964.

During the lunar landing phase of Project Apollo, the LEM will separate from the command and service modules and enter an elliptical lunar orbit that has the same time period as the circular orbit of the rest of the Apollo spacecraft.

The near point or perigee of the LEM in its elliptical orbit will be about 50,000 feet. And it is at this critical point that techniques for pilotage by reference to lunar landmarks must be placed in use.

Not only will the study contract cover crew techniques and procedures for picking safe landing spots on the moon, but investigations will be made into possible new devices and navigational displays for use aboard the LEM.

Other information resulting from the study will include such vital navigational data as the position and trajectory of the spacecraft by reference to the lunar surface at any given time.

Also, the study will yield analysis of linear and angular errors to be expected in using various methods of navigation compared against such factors as altitude above a landmark, distance to a landmark and the value of moon maps now available for lunar missions.

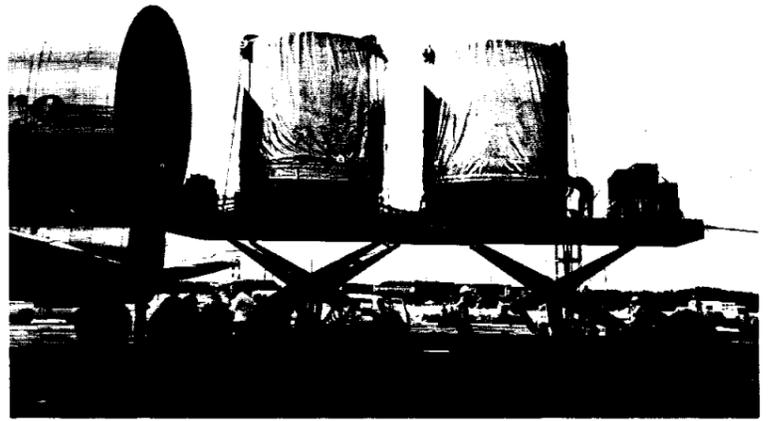
Doctors

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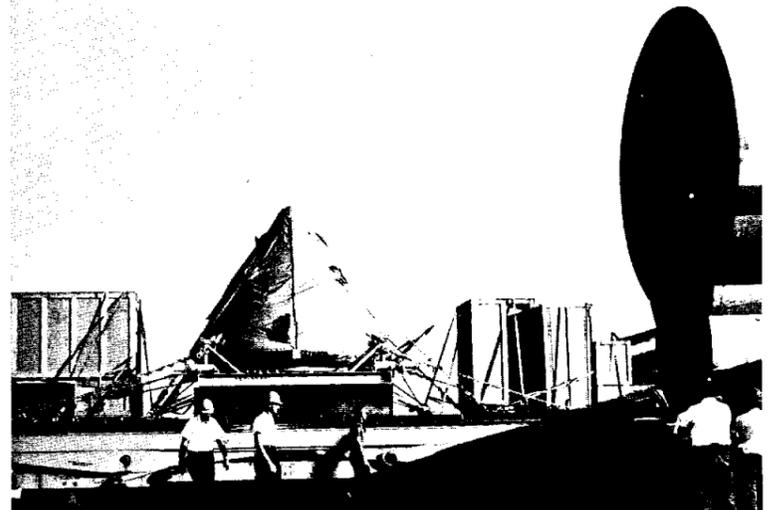
sponsorship of Dr. W. Randolph Lovelace II, consultant in space medicine at NASA Hq.

The committee of doctors heard briefings by Dr. Joseph F. Shea, manager, Apollo Spacecraft Program Office; Charles W. Mathews, manager, Gemini Program Office; and Dr. Berry.

Purpose of the meeting here was to inform the doctors---all outstanding in their respective medical fields---of the space and weight limitations connected with sending medical experiments on future manned spaceflights and to pave the way for greater participation on the part of the biomedical community in the medical aspects of the manned space flight program.



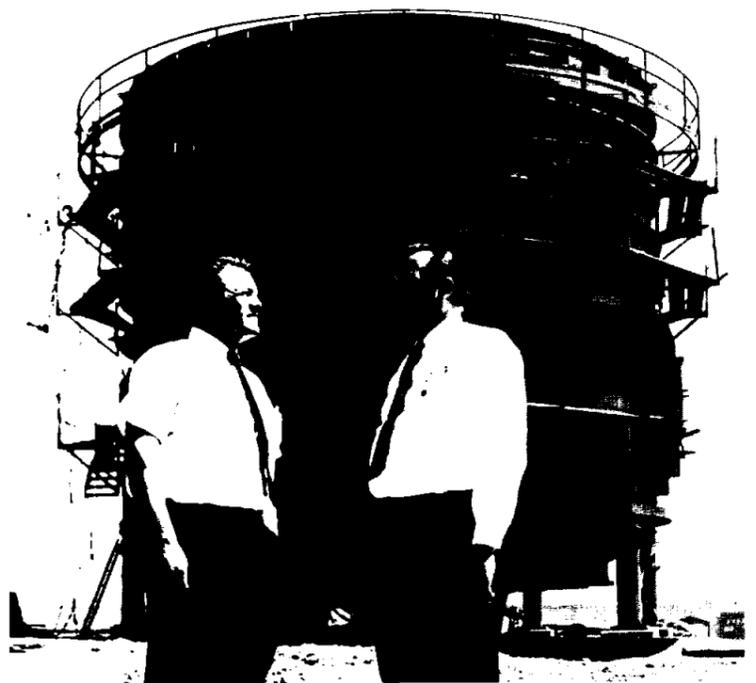
ARRIVING AT CAPE KENNEDY—The Service module and adapter section for Apollo boilerplate 15 are shown as they were unloaded June 7 from the "Pregnant Guppy" aircraft (a modified C-97 cargo plane) after being flown from North American Aviation's S&ID, Downey, Calif., to Cape Kennedy.



COMMAND MODULE ARRIVES CAPE KENNEDY—The Apollo Boilerplate 15 command module and related equipment is shown after being unloaded from the "Pregnant Guppy" onto a trailer which will transport it to Hangar AF after arriving at Cape Kennedy on June 15. BP-15 is to be part of the SA-7 flight scheduled late this summer.



EXTENDED APOLLO—The artist's concept shows one of the possible future missions of the Apollo spacecraft. This laboratory system is the Extended Apollo, consisting of a modified Apollo spacecraft and a three to six-man laboratory built into the Lunar Excursion Module adapter. The complete vehicle would be launched into orbit by a Saturn 1B. The Command Service Modules would be replaced every three to four months, with the lab remaining in orbit up to one year. The concept shown was investigated by North American's Space and Information Systems Division under contract to the NASA Manned Spacecraft Center. Wing-like objects in this concept are panels of solar cells which convert the sun's rays into power.



SENATOR AT SPACE SITE—Sen. Edwin L. Mechem gets his first on-the-spot rundown on NASA Manned Spacecraft Center White Sands Operations activities from Operations Manager Wes Messing, right. The New Mexico Republican, during his three-hour visit to the NASA facility 20 miles northeast of Las Cruces, N. M., saw the Project Apollo lunar excursion module altitude simulation tank, in the background, as well as service module test stands and the service engine preparation building.

Whirlpool Providing Food And

To the casual observer the road from washing machines to food and waste management hardware for spacecraft may seem long and winding. For Whirlpool Corporation it was a natural path toward fulfilling its goal of providing for man in his environment. the business of life support.

In its business of life support Whirlpool invested heavily in research. Heat, cold, air, water and food were the subjects of intensive study. Man's environment, whether it be on earth, in space or on the moon is the area that the scientists and engineers of Whirlpool's research team think of as a workshop.

Man's health and well be-

ing are their problems. They have learned how to control the air he breathes, prepare and preserve the food he eats and dispose of the waste of his environment. Whirlpool believes that only through research can it be prepared for the future of its business.

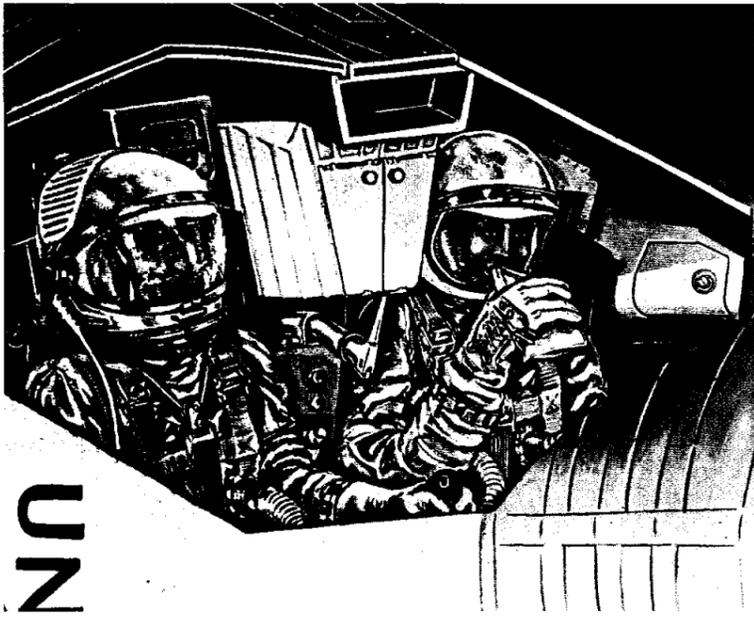
Whirlpool scientists realized that the problems on earth and their investigations all applied equally to the problems of life support in space. This knowledge was applied several years ago to the development of a 3-man, 14-day compact feeding console for the Air Force. Since this "Space Kitchen" Whirlpool's research has come a long way accented by the very present need for infallible food and waste management systems for the nation's astronauts.

Present research is designed to provide life sup-

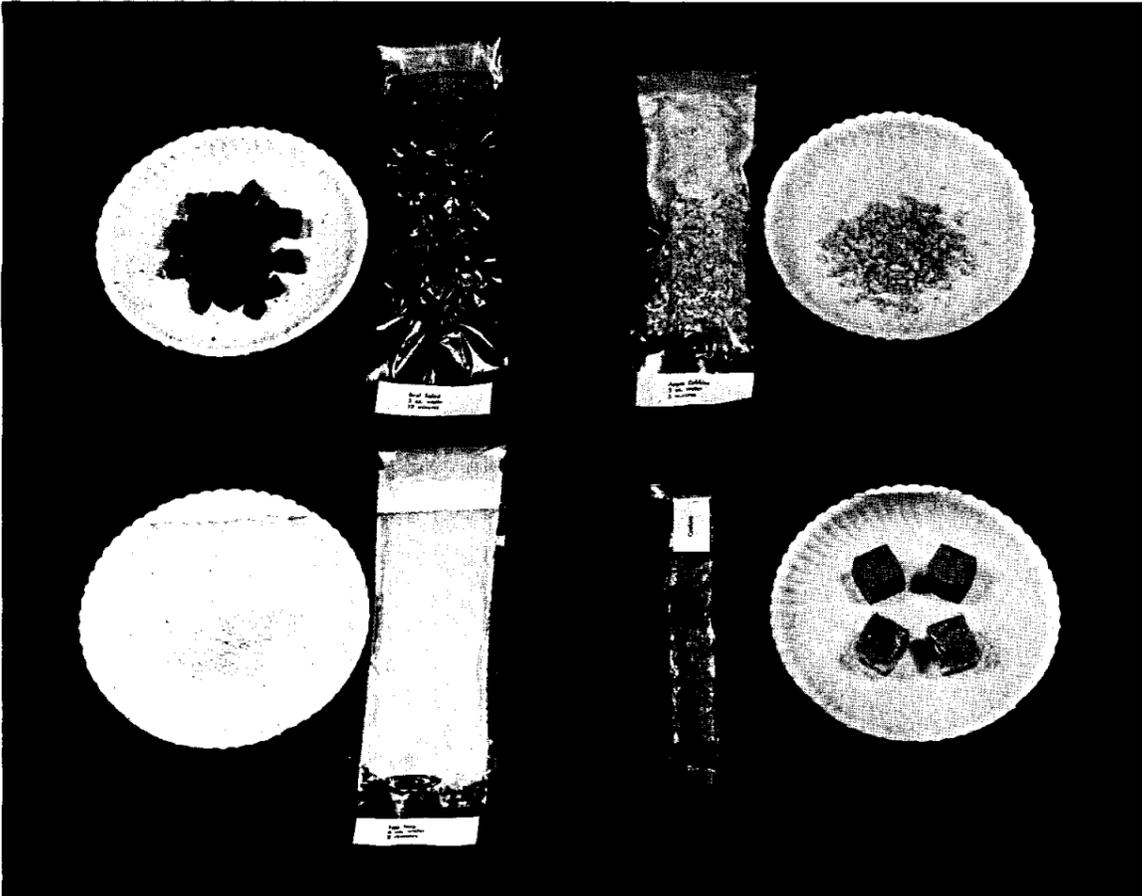
port for the space missions of this decade from Gemini to the moon to orbiting space stations to a fly by of Mars. Future research will penetrate deeper into space with important applications here on earth.

To coordinate and intensify its government work Whirlpool established a Systems Division in 1962. This division is responsible for the studying and producing the life support systems that will sustain man in his environment. Some of the projects now underway in the space program are described below:

From that "compact" "Space Kitchen" (10 ft. long and weighing 800+ lbs.) of a few years ago, the unit presently planned to supply for 2 men for 14 days on the Gemini mission is a little box, shaped somewhat like a keystone, and fitting within a space less than two



GEMINI LIFE SUPPORT SYSTEM - This artist's concept of a prototype of the Whirlpool-developed feeding system for Project Gemini shows how the system fits in the spacecraft. The astronaut at the right is eating a meal after adding water to a package of freeze-dried food.



SAMPLES OF FOOD as packaged for storage and use in Project Gemini. At top are beef salad and apple cobbler. Lower packages contain egg nog and cookies. Cookies are packaged with an edible overwrap which eliminates the possibility of crumbs in the spacecraft's air space.



SPACE FOOD FORMULATION - Adequate caloric content is furnished and food chemists assay all foods to assure proper nutritive balance has been maintained.



ASTRONAUT John W. Young, (2nd from left) shakes hands with Whirlpool's president, John H. Platts. Also on hand to greet the visiting astronaut were Dr. Norman Roth, (left), director of Whirlpool's life support department and William Mahaffay, vice president of research and engineering for Whirlpool. Young visited Whirlpool with other NASA officials to review Whirlpool's work in the development of systems for food management, waste management and personal hygiene for Project Gemini. The work is being conducted by the Systems Division of Whirlpool under the direction of Dr. Roth..



GEMINI food storage and food reconstituting unit.

EDITOR'S NOTE: This is the thirtieth in a series of articles designed to acquaint MSC personnel with the Center's industrial family, the contractors who make MSC spacecraft, their launch vehicles and associated equipment. The material on these two pages was furnished by the Public Relations Department, Whirlpool Corporation.

Proposed Salary Increase Passes House, Up To Senate

A roll call vote of 243-157 in the U.S. House of Representatives June 11 revived the hopes for a boost in salaries for government employees.

The pay bill has gone to the Senate for consideration.

The average secretary would get a raise of about \$300 a year with the bigger increases being in the

higher grades.

President Lyndon B. Johnson said of the proposed pay raise, "This is an important step in helping maintain a high level of government efficiency and assuring that able and experienced men and women can work for their country without a financial penalty."

A chart showing the present and proposed pay scales along with the amount of the increases in each step in grade is shown on this page.

Comparison Of General Schedule Rates Proposed For Federal Employees With Present Rates											
Grade		1	2	3	4	5	6	7	8	9	10
GS-1	Present	\$ 3,305	\$ 3,410	\$ 3,515	\$ 3,620	\$ 3,725	\$ 3,830	\$ 3,935	\$ 4,040	\$ 4,145	\$ 4,250
	Proposed	3,385	3,500	3,615	3,730	3,845	3,960	4,075	4,190	4,305	4,420
	Increase	80	90	100	110	120	130	140	150	160	170
GS-2	Present	3,620	3,725	3,830	3,935	4,040	4,145	4,250	4,355	4,460	4,565
	Proposed	3,680	3,805	3,930	4,055	4,180	4,305	4,430	4,555	4,680	4,805
	Increase	60	80	100	120	140	160	180	200	220	240
GS-3	Present	3,880	3,985	4,090	4,195	4,300	4,405	4,525	4,650	4,775	4,900
	Proposed	4,005	4,140	4,275	4,410	4,545	4,680	4,815	4,950	5,085	5,220
	Increase	125	155	185	215	245	275	290	300	310	320
GS-4	Present	4,215	4,355	4,495	4,635	4,775	4,915	5,055	5,195	5,335	5,475
	Proposed	4,480	4,630	4,780	4,930	5,080	5,230	5,380	5,530	5,680	5,830
	Increase	265	275	285	295	305	315	325	335	345	355
GS-5	Present	4,690	4,850	5,010	5,170	5,330	5,490	5,650	5,810	5,970	6,130
	Proposed	5,000	5,165	5,330	5,495	5,660	5,825	5,990	6,155	6,320	6,485
	Increase	310	315	320	325	330	335	340	345	350	355
GS-6	Present	5,235	5,410	5,585	5,760	5,935	6,110	6,285	6,460	6,635	6,810
	Proposed	5,505	5,690	5,875	6,060	6,245	6,430	6,615	6,800	6,985	7,170
	Increase	270	280	290	300	310	320	330	340	350	360
GS-7	Present	5,795	5,990	6,185	6,380	6,575	6,770	6,965	7,160	7,355	7,550
	Proposed	6,050	6,250	6,450	6,650	6,850	7,050	7,250	7,450	7,650	7,850
	Increase	255	260	265	270	275	280	285	290	295	300
GS-8	Present	6,390	6,600	6,810	7,020	7,230	7,440	7,650	7,860	8,070	8,280
	Proposed	6,630	6,850	7,070	7,290	7,510	7,730	7,950	8,170	8,390	8,610
	Increase	240	250	260	270	280	290	300	310	320	330
GS-9	Present	7,030	7,260	7,490	7,720	7,950	8,180	8,410	8,640	8,870	9,100
	Proposed	7,210	7,455	7,700	7,945	8,190	8,435	8,680	8,925	9,170	9,415
	Increase	180	195	210	225	240	255	270	285	300	315
GS-10	Present	7,690	7,945	8,200	8,455	8,710	8,965	9,220	9,475	9,730	9,985
	Proposed	7,840	8,110	8,380	8,650	8,920	9,190	9,460	9,730	10,000	10,270
	Increase	150	165	180	195	210	225	240	255	270	285
GS-11	Present	8,410	8,690	8,970	9,250	9,530	9,810	10,090	10,370	10,650	-
	Proposed	8,550	8,845	9,140	9,435	9,730	10,025	10,320	10,615	10,910	11,205
	Increase	140	155	170	185	200	215	230	245	260	-
GS-12	Present	9,980	10,310	10,640	10,970	11,300	11,630	11,960	12,290	12,620	-
	Proposed	10,200	10,555	10,910	11,265	11,620	11,975	12,330	12,685	13,040	13,395
	Increase	220	245	270	295	320	345	370	395	420	-
GS-13	Present	11,725	12,110	12,495	12,880	13,265	13,650	14,035	14,420	14,805	-
	Proposed	12,075	12,495	12,915	13,335	13,755	14,175	14,595	15,015	15,435	15,855
	Increase	350	385	420	455	490	525	560	595	630	-
GS-14	Present	13,615	14,065	14,515	14,965	15,415	15,865	16,315	16,765	17,215	-
	Proposed	14,170	14,660	15,150	15,640	16,130	16,620	17,110	17,600	18,090	18,580
	Increase	555	595	635	675	715	755	795	835	875	-
GS-15	Present	15,665	16,180	16,695	17,210	17,725	18,240	18,755	19,270	-	-
	Proposed	16,460	17,030	17,600	18,170	18,740	19,310	19,880	20,450	21,020	21,590
	Increase	795	850	905	960	1,015	1,070	1,125	1,180	-	-
GS-16	Present	16,000	16,500	17,000	17,500	18,000	-	-	-	-	-
	Proposed	18,935	19,590	20,245	20,900	21,555	22,210	22,865	23,530	24,175	-
	Increase	2,935	3,090	3,245	3,400	3,555	-	-	-	-	-
GS-17	Present	18,000	18,500	19,000	19,500	20,000	-	-	-	-	-
	Proposed	21,445	22,195	22,945	23,695	24,445	-	-	-	-	-
	Increase	3,445	3,695	3,945	4,195	4,445	-	-	-	-	-
GS-18	Present	20,000	-	-	-	-	-	-	-	-	-
	Proposed	24,500	-	-	-	-	-	-	-	-	-
	Increase	4,500	-	-	-	-	-	-	-	-	-

Duplicate Bridge Now Meeting Twice Monthly

Membership in the MSC Duplicate Bridge Club has shown an increase due to the recent decision of club members to meet on the first and third Tuesdays of each month rather than once a month.

The extra meeting night provides more opportunity for participation by members who travel frequently.

Meeting time is 7:15 p. m. at the Ellington NCO Club. New members and guests are always welcome.

Winners of the May 19th session with nine tables were: NS, Leona Kempainen and Betty Mason; EW, Mr. and Mrs. Richard McCreight.

The June 2 session winners with seven tables were: NS, Leona Kempainen and Warren Hardin; EW, Mr. and Mrs. Wayne Brewer.

Rod And Gun Club Holds Skeet Shoot

A shotgun practice for MSC trap shooters was held June 4th at the Rhom and Hass Chemical Plant trap and skeet range.

Present were Herschel Jamison (team captain), Robert Able, Ray Diemer, Darrell Kendrick, Hoyt McBrayer and Jim Hoskins.

Shooters who want action unobtainable in other shooting sports are invited to join the fun.

Friday House Party Set By Singletons

The house party for the NASA Singleton Club will be held from 8:30 'til, this Friday at 10242 Fuqua in the Beverly Hills addition just off the Gulf Freeway.

A \$1 admission charge provides set-ups, goodies, music and games. It is a BYOB affair.

One of the feature events of the evening will be a watermelon eating contest.

For tickets and additional information, single people may call Jim McBarron at Ext. 34058.

Area Wage Board Survey Underway

On June 5, 1964, the Army-Air Force Wage Board, in conjunction with NASA, authorized collection of wage data from major industries in the Houston-Galveston area.

The new data will be combined with that obtained from the Bureau of Labor Statistics to form the basis for determining revision, if warranted, in Wage Board pay rates for this locality.

Any pay adjustments resulting from this survey will become effective with the first pay period beginning after August 7, 1964.

Mercury Club Schedules Picnic On July 12

The countdown is well underway for the Mercury Club's annual "Family Fun" picnic scheduled for 11 a. m. launch on July 12. The picnic will orbit between the north Patrick AFB picnic area and the beach till dusk.

All Manned Spacecraft

Center employees and MSC contractors are invited to take in the fun which will feature blueberry pie and watermelon eating contests for which prizes will be awarded children and adults.

Refreshments will be available throughout the

entire picnic. Fried chicken, Boston baked beans, hot rolls and trimmings will be supplied to hungry picnickers at 1 p. m.

Tickets will be available from Mercury Club Committee members at 50 cents for adults and 25 cents for children.

Square Dance Club Invites Participants And Spectators Too

The NASA-MSA Square Dance Club is now meeting each Tuesday at 8 p. m. at 511 Iowa Street in South Houston.

Several meetings have been held thus far and interested parties may call Pauline Jones, Ext. 33881. She can also provide directions to the club meeting hall which is air conditioned and has an excellent dance floor.

If you are uncertain as to whether you would like to square dance, you are invited to come and watch, Pauline said.



"One more remark about my square dancing and you get a sneaker right between the eyes."

Mercury Club Helps Send Band To World Fair

The MSC Mercury Club, Cape Kennedy, recently presented \$240 to the Missileland Boosters Club of Cocoa, Fla. to help send the Cocoa High School's Missileland Band to the Florida Pavillion of the New York World Fair.

The donation was made by Elmer A. Horton, club chairman, and will provide trip expenses for two band members.

Members of the Mercury Club consist of MSC and MSC contractor employees and the group meets once each month for recreation.



ADMINISTRATOR James E. Webb, NASA (right) receives a new \$75 Series E. Savings Bond for his personal check from Secretary of the Treasury Douglas Dillon. This was the first of 59 sold to Webb and top NASA officials. The occasion highlighted the current campaign by NASA to increase total federal employee participation in the payroll savings plan. The bond bears the portrait of former President John F. Kennedy.

PERSONNEL NOTES:

(EDITORS NOTE: The messages in this column are being presented by the MSC Personnel Office).

Incentive Awards Program Questions And Answers

Q. Under what authority is the Incentive Awards program administered?

A. The Government Employees' Incentive Awards Act, Title III, Public Law 83-763, which became effective November 30, 1954.

Q. What is the purpose of the Incentive Awards Program?

A. To encourage employees to participate in improving the efficiency and economy of government operations and to recognize and reward employees, individually or in groups, for their contributions to that goal.

Q. What are some of the contributions rewardable under the program?

A. Suggestions, inventions, superior accomplishments, special services, and other personal efforts. To qualify for an award, however, the contribution must have been made while the contributor was a government employee.

Q. Who is eligible to participate in the program?

A. All civilian employees

of the Federal government.

Q. How do I benefit from participation in the program?

A. It focuses attention on your ideas and performance, provides personal recognition and reward for your contributions, and improves your chances for advancement because receipt of an award is given due weight when you are considered for promotion.

Q. Are taxes withheld from award payments?

A. Yes. Cash awards are considered to be salary for income tax purposes. Therefore, deductions for withholding tax are made from each cash award.

Q. What if my suggestion is adopted but not specifically as stated?

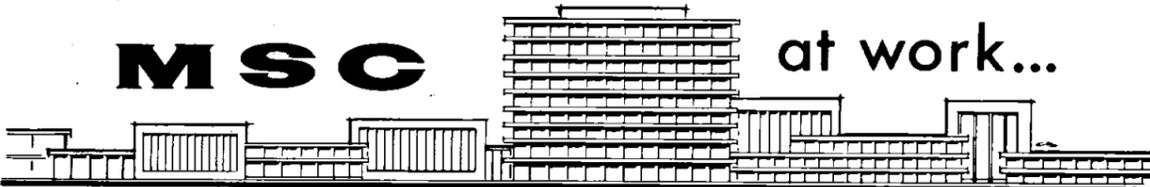
A. Contributions whether approved as submitted or approved in part are eligible for award consideration. The amount of award is adjusted to indicate the value of the suggestion in motivating management's action.



GOOFBALLS CHAMPIONS—The Goofballs, first half winners, emerged as champions of the MSC Couples League in a roll-off with the second half winners, the Ridgerunners. At a bowling banquet on June 6 at the Ellington AFB Officer Open Mess, trophies were presented to the Goofballs. They are (l. to r.) Betty Dodson, Joe Dodson, Verra Lantz, Ralph Lantz, Larry Lindley and Dee Lindley.

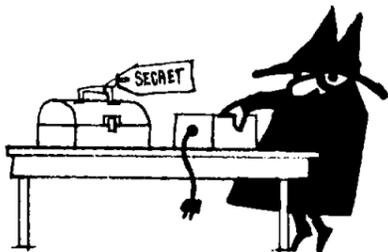
MSC

at work...



how to be a spy

in
six
easy
lessons



5

Remember, not all classified material is printed. A few feet of movie film, a dozen slides can be a bonanza.

—Reprinted Courtesy General Dynamics News

SAFEGUARD CLASSIFIED MATERIAL!

A NEW DENOMINATION



A NEW REASON TO BUY U. S. SAVINGS BONDS



NITA BOULDIN, clerk-steno, in the Small Business and Industry Assistance office of Procurement and Contracts Division, logs in unsolicited proposals.



CAROL ALLEY, clerk-steno, in the General Research Branch, Procurement and Contracts Division, sorts incoming mail.



LARRY PETTY, experimental facilities mechanic, Field Test Branch, Technical Services Division, adjust the linkage on a two-thirds scale Gemini tow vehicle.



JOHN D. ORR, experimental machinist, of the Technical Services Division, Field Test Branch, takes a face cut on a metal part in a lathe.

Waste Systems For Gemini

by two by two feet and weighing less than 60 pounds. In addition to containing all the food, it is necessary to replace the food with the human waste as the food comes out, the waste goes in.

These are the facts of life on the early space mission so very precious is weight and space! Gone are the refrigerators, water heaters, and ovens for warming food. All food and beverages now must be consumed at room temperature. This does not mean that hot foods wouldn't be better, and they may still be added, for there are doctors who feel that hot foods are absolutely necessary for peak performance of the astronauts.

Whirlpool has long been dedicated to the proposition that a variety of palatable foods should make meal times the high points in the astronaut's confined and busy day. This has been done. Adequate caloric content is furnished and all foods must be assayed by food chemists. The proper nutritive balance between proteins, minerals, carbohydrates, and vitamins has

been maintained. These are some typical meals for the Gemini mission:

Meal 1 -- Peach Bits, Ham and Eggs, Bread Substitute, Orange Juice.

Meal 2 -- Ham Casserole, Bread Substitute, Cookies, Blended Juice.

Meal 3 -- Chicken and Vegetables, Bread Substitute, Applesauce, Candy Squares and Chocolate Beverage.

Snack -- Chocolate Beverage, Cookies.

These foods are all pre-seasoned, pre-cooked, freeze dehydrated dishes, contained item by item in small plastic food packages which are necessary under the weightlessness of zero gravity.

The proper amount of water is added, a couple of minutes allowed for rehydration, and food is transferred from the food packages into the mouth, chewing and swallowing much the same as normal. Dry foods will cause dust to float up under the lack of gravity and clog the nasal passages, or electrical relays.

In addition to the main entrees -- meat, vegetables, beverages, an assortment of bread substitutes, fruit bits and cookie items have been developed. Crumbs in the air space can be hazardous, so Whirlpool packages all bite-size snack items in an edible overwrap. These little bits are very high in calories, running 35-40 per bite, about 5.5 to 6.5 calories per gram -- pure fat is 8.0.

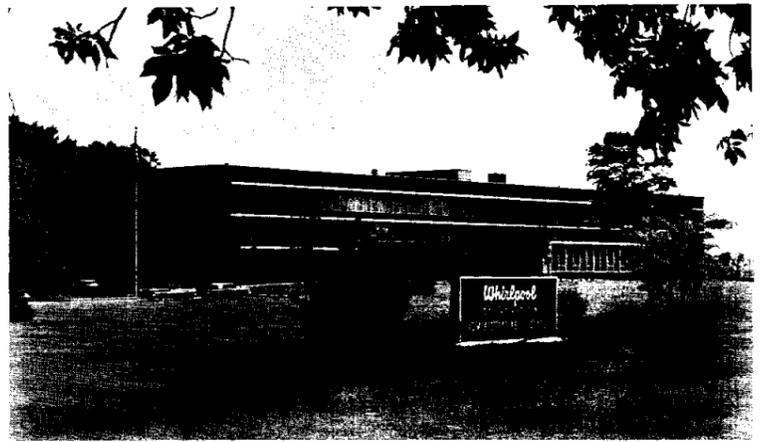
For longer space missions Whirlpool plans to do even better. It takes a long, long time to get to

Mars even at 25,000 miles per hour or faster. As a result Whirlpool scientists are thinking in terms of a closed ecological system--just like this planet of ours; Earth -- with only the heat of the Sun as an energy input. In other words, we must use the sun's energy to grow the foods the space travelers will eat.

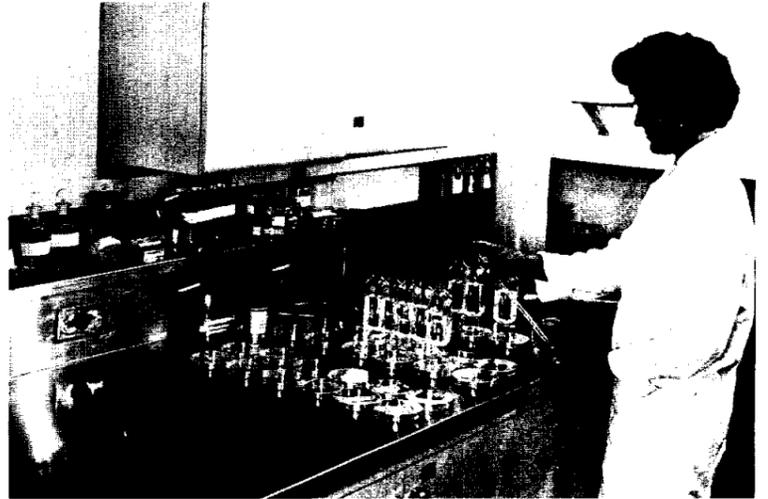
The plants as they grow must absorb the carbon dioxide the space travelers will exhale, and furnish the oxygen needed to breathe. The plants must consume the waste products and convert them to the food to be eaten. And all this must be done in the least possible space, with the least possible weight, the least possible power requirements, and with the best possible results!

Involved in this exciting new field are old technologies: Physics, chemistry, mechanics, physiology. And biology, -- Biochemistry, bioengineering, biophysics, bioelectronics and new technologies--some never heard of until very recently; bioastronautics, bionics, bionucleonics, to mention only a few. Notice how critical is the "bio" part -- life -- is in these technologies. Man is in all the systems because man is responsible for these developments, these technologies, this growth.

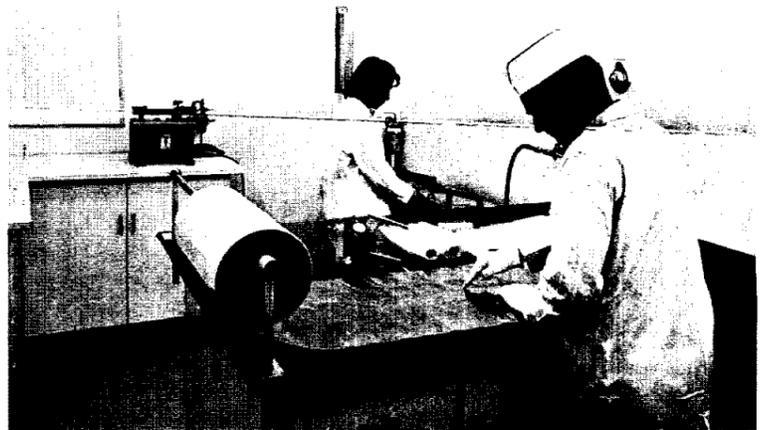
Whirlpool Corporation employs more than 15,000 people in six major plants in the midwest and offices and facilities throughout the world. Customer satisfaction is uppermost with every Whirlpool employee whether the customer is a housewife or an astronaut.



WHIRLPOOL'S ADMINISTRATIVE CENTER located in Benton Harbor, Mich., is the headquarters for executive officers and hub of corporate activities.



PSYCHROPHILIC plate culturing by a chemist at Whirlpool. These tests determine how certain bacteria thrive at relatively low temperatures.



PACKAGE FORMULATION for space foods such as the main entrees -- meat, vegetables, beverages, an assortment of bread substitutes, fruit bits and cookie items have been developed.



ELISHA GRAY II
Chairman of the Board
Whirlpool Corporation



BACTERIAL plate counting is conducted by a food chemist at Whirlpool.



FREEZE-DRYING PROCESS -- Space foods are all pre-seasoned, pre-cooked, freeze dehydrated dishes, contained item by item in small plastic food packages.

The SPACE NEWS ROUNDUP, an official publication of the Manned Spacecraft Center, National Aeronautics and Space Administration, Houston, Texas, is published for MSC personnel by the Public Affairs Office.

Director Robert R. Gilruth
Public Affairs Officer Paul Haney
Chief, News Bureau Ben Gillespie
Editor Milton E. Reim

Your Ideas Are Welcomed

In agencies where suggestion programs are in operation, the results have usually been very gratifying to both management and the individual employee. Employees who submit acceptable suggestions take great pride in having them accepted and adopted, and many suggestions result in recognition or cash awards. So be sure to sign your suggestions when you submit them - you deserve the recognition they may produce and your boss will also appreciate knowing that you take an active interest in helping make MSC a better and more efficient place to work.

On The Lighter Side



LARGEST DIAMETER SOLID ROCKET—White-hot exhaust gases rush skyward during successful static firing of world's first 156-inch-diameter solid propellant rocket motor at Lockheed Propulsion Company's Potrero production and test facility near Beaumont, Calif. Conducted (May 28) under executive management of Space Systems Division, Air Force Systems Command, the test demonstrated capability of a new-type nickel-steel motor case, and of jet tab system for controlling direction of rocket thrust. Standing 80 feet above floor of test bay, rocket weighed over 500,000 pounds and generated average thrust of about 900,000 pounds during firing lasting about two minutes.

WELCOME ABOARD

Ninety-one new employees joined the Manned Spacecraft Center during the last reporting period. Of this total, nine were assigned to MSC-Florida Operations, one to MSC-White Sands Operations, with the remaining 81 assigned here in Houston.

AUDIT OFFICE: Jimmy R. Green.

PUBLIC AFFAIRS OFFICE: Edwin E. Walker, and Sandra E. Wilson.

CENTER MEDICAL OFFICE: Juanita F. Edwards.

PERSONNEL DIVISION: Voula Tsitsera.

PROCUREMENT AND CONTRACTS DIVISION: Monie L. Banks.

RESOURCES MANAGEMENT DIVISION: Richard M. Kobdich, Donald L. Lackey Jr., Elliott Manferd, Daniel F. McKenzie, and Robert N. Perry.

MSC-WHITE SANDS OPERATIONS (New Mexico): Gerald L. Mohnkern.

ENGINEERING DIVISION: Kenneth R. Hoffman.

TECHNICAL SERVICES DIVISION: Richard G. Courtney, Jesse L. Crusey, and Robert L. Pace.

OFFICE SERVICES DIVISION: Leonce L. Sampson.

LOGISTICS DIVISION: Clarence W. Johnston, Robert L. Martin, Fred G. Morford, John J. Thornton, and Suzette M. Winterath.

TECHNICAL INFORMATION DIVISION: Amelia S. Goldenbaum, and Bruno G. Vasquez.

GEMINI PROGRAM OFFICE: Loren G. Kragh.

APOLLO SPACECRAFT PROGRAM OFFICE: Faye N. Haney, Susan M. Leech, and Evelyn A. Teeters.

GUIDANCE AND CONTROL DIVISION: Roger M. Goldwyn.

STRUCTURES AND MECHANICS DIVISION: Robert P. Bolte, Donald E. Coles, and Herbert C. Kavanaugh.

ADVANCED SPACECRAFT TECHNOLOGY DIVISION: Maynard C. Dalton, Dorothy H. Pearson, and Noel C. Willis.

CREW SYSTEMS DIVISION: Jimmie L. Morrow.

GUIDANCE AND CONTROL DIVISION: Richard R. Baldwin, John R. Henson, Michael P. Loeb, and Annie M. Patrick.

INSTRUMENTATION AND ELECTRONIC SYSTEMS DIVISION: Albert J. Balusek, Jefferson F. Lindsey, William C. Morgan, Gerald F. Pels, Teddy K. Sampsel, Donald K. Smith, and Melvin D. Woolsey.

COMPUTATION AND ANALYSIS DIVISION: Edward M. Buckner, Linda F. Reynolds, and Robert T. Voigt.

PROPULSION AND POWER DIVISION: William N. Lingle, Tony E. Redding, Robert R. Rice, and Betty A. Schrey.

MSC PERSONALITY

Flight Operation's Rod Rose Coordinates Apollo Support

One of the most recent accomplishments of Rodney G. Rose, technical assistant for Apollo to the Assistant Director for Flight Operation, was conducting the revision of all communications specifications for Apollo in the Block Two Flights (Flights 206 and on).

Rose is responsible for directing, coordinating, integrating and reviewing the efforts of the Flight Control Division, the Mission Planning and Analysis Division, the landing and Recovery Division and the MSCC Program Office in support of the Apollo program.

He assumed his present duties of maintaining an integrated and coordinated

launchings which included the Little Joe II test flight on Dec. 4, 1959, with rhesus monkey "Sam" as occupant of the craft.

Rose was one of the first MSC engineers to visit McDonnell Aircraft to work on Mercury spacecraft systems testing. He was project engineer on the Mercury landing system development and water fatigue program which led to the developed and man-rated landing system for the first Mercury flight.

From May 1961 to November 1962, Rose was in the Gemini Program Office and was responsible for the Gemini parachute, ejection seats, and landing gear aerodynamics and testing. During this period he was also active in research and development of the para-glider.

Following this, until assuming his present duties, he was a technical assistant in the Flight Control Division.

He was born in Huntington, Hunts, England where he completed his early schooling. In 1949 he received his BS degree equivalent from the College of Technology, Manchester, England and his D.C. Ae. (equivalent of an MS degree in aeronautical engineering) from the College of Aeronautics, Cranfield, England in 1951. He also completed a five-year aeronautical-engineering apprenticeship with A.V. Roe and Co., Ltd., at Manchester.

Rose worked six years with AVRO in Canada. His research field was aerodynamics—low speed characteristics of swept back and delta wings, audio air-speed system and "super circulation" for deck landing aircraft, and visibility from aircraft.

During this period he wrote numerous technical papers concerning his research, and after joining MSC he authored or co-authored several NASA technical documents.

He is an associate fellow of the Royal Aeronautical Society of England and an associate, Manchester College of Technology.

Rose is married to the former Leila Howe of Bedford, England. The couple has two children: Steven 9, and Christopher 8, and the family resides in Seabrook, Tex.

His hobbies include a very lively interest in photography.



RODNEY G. ROSE

flight operations effort in support of the Apollo program in December of 1963.

In April 1959, Rose joined the Manned Spacecraft Center (then Space Task Group) and was appointed project engineer for the Little Joe R&D Program for six

MSC-FLORIDA OPERATIONS (Cape Kennedy, Fla.): Lester H. Browning, Leonard C. Colson, Bob Dicks, Christine R. Hamlin, Ruth C. Hawkins, Lee C. Hull Jr., Loyd A. Knight, Frank W. Sitton, and Catherine M. Stone.

OFFICE OF ASSISTANT DIRECTOR FOR FLIGHT OPERATIONS: Penny B. Conner, Barbara M. Corwin, Loyce E. Roberts, Virginia Spearman, Dorothy J. Turner, and Norma J. Wycarver.

FLIGHT CONTROL DIVISION: Joella M. English, Russell H. Goodwin, Gerald D. Griffin, Estelle S. Groda, Leon H. Payne, William L. Peters, Gary B. Scott, Emery E. Smith Jr., and Robert C. White.

RECOVERY OPERATIONS DIVISION: Coye M. Jones.

MISSION PLANNING AND ANALYSIS DIVISION: Robert A. Balusek, Aldo J. Bordano Jr., Walter B. Gillette, Robert K. Holkan, Jerome W. Kahanek, Tommy D. Keeton, Thomas J. Mason, William A. Sullivan, Edward J. Svrcek Jr., and Bobbie D. Weber.



HUGE SIREN USED IN GEMINI TEST - A Gemini spacecraft glass window is inspected following an acoustic vibration test at Martin-Denver's Acoustic Laboratory. The tests were conducted under a contract with McDonnell Aircraft Corporation, builder of the Gemini spacecraft to insure that the corning window would withstand the acoustically induced vibrations created during flight.

Noise From Powerful Siren

Tests Gemini's Windows

The world's most powerful siren was used recently to verify the ability of the two man Gemini spacecraft windows to withstand the tremendous sound levels that occur during early portions of flight.

The siren, located at the Acoustic Laboratory of Martin Company's Denver

WSMR Launch Tests Meteoroid Hazards In Space

Post-flight examination indicates that a micro-meteoroid experiment performed as planned in a launch on June 10 at the White Sands Missile Range in New Mexico.

Purpose of the test was to gather information on meteoroid hazards in space. The probe was blown in a meteor shower.

The probe was launched by an Aerobee rocket to a height of 95 miles. Engineers from NASA's Langley Research Center, Hampton, Va., who managed the project, said photographic and radar evidence shows that the probe was ejected from its canister atop the rocket and a paraglider wing inflated to provide a glide back to Earth. The probe was recovered and returned to the experimenters.

The probe carried equipment to measure meteoroid penetration depths in thin materials. The information was obtained by telemetry cameras aboard the probe and by optical equipment on the ground.

Division, was employed in the unusual test program under a contract with the McDonnell Aircraft Corp. of St. Louis, Mo.

Also included in the tests was a section of a radiator used in the spacecraft air-conditioning and equipment cooling system.

The siren originally was built to confirm the ability of TITAN intercontinental ballistic missiles to withstand the tremendous acoustic pressures which are developed in a launch from within underground silos.

It's a random siren, which means that it produces sound throughout the scale simultaneously. It emits an ear-splitting roar, rather than the undulating wail of police and fire sirens.

Two turboprop aircraft engines provide the power. The special Corning glass window, one of two that provide visibility for the Gemini Astronaut about 12 by 8 inches, was subjected to acoustic sound levels up to 160 decibels. Tests of five-minute duration subjected the glass to the source of the sound at various angles. There was no damage to the window.

The section of cooling system radiator used in tests measured about two by three feet.

Fifteen-minute exposures to 160 decibels of sound levels indicated that the radiator would face no problems from acoustically induced vibrations generated during flight.

Water-Cooled Underwear For Space Being Developed By MSC Engineers

A pair of mail order house underwear riddled with approximately 40 tiny water pipes could prevent astronauts from getting that soggy wrinkled look all over during a space flight.

Manned Spacecraft Center engineers are developing a water-cooled undergarment to replace the oxygen cooling system now used in space suits.

In past flights, astronauts have emerged from the space suit dripping with perspiration, looking as if he had spent hours in a dish pan.

Refinements in the gas cooling system for Gemini and Apollo space suits haven't helped much. The heavy garments, abetted by high pressurization, are sweat boxes.

Research into conductive cooling for space suits has been led by a young British doctor, John Billingham, who introduced NASA to the possibilities of such a system.

He now heads the Environment Physiology branch of the Manned Spacecraft Center, where experiments have been going on for a year. The British, leaders in this area, have been testing water cooled suits since 1962.

Until May 20, tests here were conducted with a store purchased pair of underwear with the plastic water pipes sewed in the material by engineers.

An "in-house" suit built to specifications was promptly put to use in an experiment with a NASA engineer wearing the garment and walking a treadmill for one hour at a time.

He wore the water cooled underwear under a cumbersome and heavy Mercury space suit. Despite the brisk walk and the heavy clothing, his skin temperature stayed at 82 degrees, nine degrees below normal resting temperature of 91, which was satisfactory.

Dr. Billingham said if the engineer, cool and dry in his water cooled underwear, had been using the oxygen system, his skin temperature would have been 97 degrees.

Conduction heat transfer is one of four methods which the human body can exchange heat with its environment. The transfer is brought about by contacting the skin with another substance of different temperature.

Working on this theory, Dr. D. Mck. (cq) Kerlake, head of Climatic Physiology, RAF Institute, Aviation Medicine, Farnborough, England, determined that different parts of the body had different skin temperatures.

The deep body temperature is 98.6 degrees, while skin readings range from

94 degrees at the head, chest, abdomen, back and buttocks to 83 degrees at the hands and feet.

Derek Burton, human engineering expert of the Royal Aircraft Establishment in England, set to

The water then divides into many smaller tubes and makes its way back to the waist where it empties and is then re-pumped back through the suit.

The many small pipes touch the skin and by the time the water has reached the outlet it has gained 11 degrees, which is the normal spread of temperature in the human body.

Billingham said the water cooling method also eliminates dehydration caused by excessive sweating.

To change temperature inside the suit, the rate of flow is either increased for more cooling or decreased for less cooling.

Another big advantage of the water cooled suit over the gas cooled one, said Billingham, is power reduction.

The gas cooled suit operates by evaporative cooling.

Tests have proved water requires less power for the circulation than gas.

Besides the lesser power requirements, Billingham said, the water cooling system saves valuable space compared with the gas system.

Billingham remains cautious in predicting when the system could be used in space flight.

He says only that "the water cooled space suit looks promising for the future."

"It is now in research and development," he said. "In operation and theory, the suit looks acceptable. But we must test it much more for reliability, ease of maintenance and then integrate it into the spaceship. It is now a hardware problem," he said.

In one experiment, the cooling process was reversed and warm water was used. The test subject was warmed by the water.

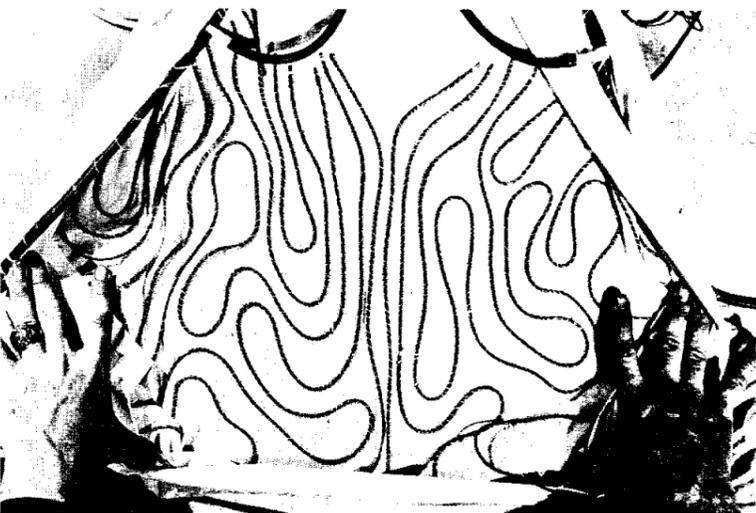


WATER-COOLED UNDERWEAR

work using these values to make a water-cooled space suit. The suit today is his basic design and he has just published a technical paper on the subject.

The device requires two pounds of water, a small pump to circulate the water and about 40 small pipes fitted into the underwear. The pump and its battery power source weigh 12 ounces.

The water enters the suit in one tube at the waist. It's temperature is 55 degrees. Four smaller tubes carry the water to the hands and feet first, points where skin temperature is lowest.



PLASTIC WATER PIPES, sewn into the material of the long underwear and worn next to the skin, will keep space travelers cool as cold water is circulated through the pipes.



SECOND FRONT PAGE

First Gemini To Be Manned Near Completion In St. Louis

The NASA Manned Spacecraft Center's Gemini program manager, Charles W. Mathews, reported on June 11 that the Nation's first Gemini spacecraft for manned flight is essentially complete.

Mathew's statement followed a two-day Development Engineering Inspection (DEI) of the spacecraft at the McDonnell Aircraft Corporation plant at St. Louis, June 9 and 10.

According to Mathews, "The spacecraft is essentially complete, and some overall systems checks have already been accomplished in satisfactory fashion. The inspection revealed that the systems configuration of the spacecraft will meet the mission requirements."

GT-3 is scheduled for flight late this year. Astronauts Virgil I. Grissom and John W. Young, the prime crew for the mission, and Walter M. Schirra and Thomas P. Stafford, backup crew, attended the meeting. Other astronauts present were Alan Shepard, chief of the Astronaut Office, and Donald K. Slay-

ton, assistant director for Flight Crew Operations.

NASA officials at the DEI included George W. Low, Manned Spacecraft Center deputy director and chairman of the DEI Board; Mathews, who also serves as vice chairman of the Board; Duncan Collins, Gemini Spacecraft manager; Christopher C. Kraft, Flight Operations director; J. J. Williams, MSC-Florida Operations; F. J. Bailey, Jr., Reliability and Flight Safety; and Maxime A. Faget, assistant director for Engineering and Development.

All Gemini spacecraft DEI's are under the supervision of the Development Engineering Inspection Board. Board members are appointed by the MSC deputy director and are responsible for assuring that the spacecraft is capable of performing its assigned mission.

G. Barry Graves Transfers To Langley Co-Workers Hold Dinner Party For Him

Over 100 co-workers of George Barry Graves were in attendance at a going-away dinner party given in his honor on June 13.

Graves, who was deputy assistant director for En-

gineering and Development, left the Manned Spacecraft Center last Friday to assume new duties with the Instrument Research Division at the Langley Research Center in Virginia.

Formerly with the Langley research Center from October 1946 to October 1962 when he joined MSC, Graves has had an active part in the manned space flight program.

He had the responsibility for the construction of the Mercury world-wide tracking and ground instrumentation systems and was head of the Navigation and Communication Research Branch and the Tracking and Ground Instrumentation Unit for Project Mercury ground stations.

In October of 1962 Graves was presented an outstanding Leadership Medal by NASA in Washington for his role in the Mercury program.

At the party held in Graves honor, Dr. Robert R. Gilruth, director, MSC, presented him with a plaque which named some of his outstanding accomplishments in the manned space flight program.

Administrative Services Offices Relocated On Second Floor Bldg. 2

In a move which took place early this week, some employees of the Office of Administrative Services were relocated in Building Two from the fourth to the second floor.

Offices relocated included the Office of the Chief; Plans and Programs Office; and the Graphic Services Branch.

Earlier, members of the Scientific and General Illustration Sections of the Graphic Services Branch had been moved to offices in Building 419.

All orders for work to be performed by the Graphic Services Branch must be processed through the office in room 239. Building Two, it was stated by the branch chief.

15 Astronauts Taking Survival Course In Jungles Of Panama This Week

The newest group of 14 astronauts accompanied by Astronaut Charles Conrad are at the U. S. Caribbean Air Command's Tropical Survival School, Albrook AFB, Panama Canal Zone, this week for a first hand course in jungle survival.

Emergency food rations and a pocketknife are two items that have been eliminated from the Gemini survival kit in order to reduce weight and volume in the spacecraft.

How well astronauts can live in the jungle without these items will be determined this week.

The fifteen astronauts will live three days in the Panama rain forest using only the items in the survival kit to stay alive.

The life support package includes a life raft, canteen with four pints of water, combination flashlight and strobe light, signal mirror, fishing kit, flint and steel fire starter with cottonballs, whistle, and compass.

Desalter kit (without a can), sun glasses, compresses, medication kit, zinc oxide ointment, sea dye marker, and a foot-long machete.

Besides this kit the astronaut would have a 28-foot personal parachute to use if he were forced down in the jungle.

Ray Zedekar, Manned Spacecraft Center pre-flight training assistant, said the food rations were taken from the kit after a jungle exercise last year with 16 astronauts.

"There was enough food in the jungle," he said, "We also reduced weight and volume in the spacecraft by eliminating the food."

The 15 astronauts to make the trip include the 14 latest additions and Charles (Pete) Conrad, who took the training last year but will act as astronaut supervisor.

On Monday and Tuesday, Air Force instructors at Albrook Air Force Base, Panama Canal Zone, conducted classroom and field studies, which included a tour through a jungle garden outside the school.

The astronauts will be shown which herbs, plants and leaves are edible and which are poisonous; what jungle animals can be eaten, the best way to catch them, how to cook them and how they taste.

Favorite jungle dishes, according to Zedekar, are the Iguana lizard, small jungle pigs and deer, and fish. A delicacy of the plant life is palm heart.

Today the astronauts are scheduled to board helicopters and to be taken deep into the jungle. Zedekar

said after the Panama incident last year, the training sites have been moved into the canal zone.

"However, Albrook officials say the terrain is as rugged as it was when the sites were located in Panama," he said.

The men will wear a garment similar to what they would have on if they had been forced to land in the jungle, which is a pair of long underwear, worn beneath the spacesuit.

The spacesuit footwear, which is expensive, will be replaced by tennis shoes, and an Air Force requirement that jungle hammocks be used, are the only deviations from a real situation.

Campsites will be occupied by two men, simulating a Gemini flight crew. Two sites will have one Air Force instructor, who will visit the men during the day to see that they are doing alright. He will sleep elsewhere.

On Friday, the men will leave the jungle. It is up to each one to find his own way out. Zedekar said the best way, and the one taught by the instructors, is to inflate the raft and float down the many tributaries to a main stream and then to a base camp.

The camps are far enough

away from each other, that the men can't see or hear astronauts in other camps.



ASTRONAUT CHARLES CONRAD on 1963 Panama jungle survival trip.

Zedekar, who participated in the last trip and will do so again, said the toughest part of the training was the rain.

"It rained every afternoon last year," he said. "Because everything in the jungle must be cooked before eaten, it was hard to find dry wood for a fire."

Zedekar said the tropical heat wasn't too bad. "There is plenty of shade," he said. "It is nothing like being in downtown Houston on a hot day."

Bermuda Recovery School Holds Gemini Rescue Course

A Gemini Recovery School is being conducted this week at Kindley AFB in Bermuda in preparation for the manned space flights scheduled to begin later this year.

The school is being conducted by Flight Operations Directorate's, Landing and Recovery Division from June 22 through 27 with Don Stullken, head of the Recovery Operations Branch, in charge of the program and Astronaut James Lovell as monitor for the space pilots.

This is the first such training course in Gemini offered to those who actually will have first contact with the returning space pilots.

Participating in the recovery exercises will be pararescue crews, Air Force navigators and maintenance personnel.

Briefings of the Gemini flight and recovery patterns will be given the group followed by technical briefings.

Included in the training recovery exercises will be ranging runs flown by the navigators over a Sarah personnel beacon and a

prototype Gemini recovery beacon; familiarization sessions in the lab with the Sarah beacon and other NASA equipment by the maintenance men; lectures for the pararescue crews on care of astronauts, on how to get pressure suits off a man, where and how to cut the suit off if necessary; and introduction of pararescue crews to the Gemini flotation collar and actual operation of it in still water tests.

The culmination of the recovery training exercise is scheduled to take place today or tomorrow when the navigators, pilots and pararescue crews will make a series of ranging runs over Gemini Boilerplate 201 floating in the open sea. The flotation collar will be dropped several times, and a pararescue crew will jump each time to attach the collar to the floating Gemini craft.